SEQUENCE LISTING

(1) GENERAL INFORMATION:

    (i) APPLICANT: LOCARNI, STEPHEN A
                BARTHOLMEUSZ, A I
                AYE, THEIN T
                DE MAN, ROBERT

    (ii) TITLE OF INVENTION: VIRAL VARIANTS AND METHODS FOR DETECTING
         SAME

    (iii) NUMBER OF SEQUENCES: 41

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        (F) ZIP: 22201

    (v) COMPUTER READABLE FORM:
        (A) MEDIUM TYPE: Floppy disk
        (B) COMPUTER: IBM PC compatible
        (C) OPERATING SYSTEM: PC-DOS/MS-DOS
        (D) SOFTWARE: PatentIn Release #1.0, Version #1.30

    (vi) CURRENT APPLICATION DATA:
        (A) APPLICATION NUMBER: US 09/306,420
        (B) FILING DATE: 06-MAY-1999
        (C) CLASSIFICATION:

    (vii) PRIOR APPLICATION DATA:
        (A) APPLICATION NUMBER: WO PCT/AU97/00520
        (B) FILING DATE: 15-AUG-1997

    (vii) PRIOR APPLICATION DATA:
        (A) APPLICATION NUMBER: AU PO3519
        (B) FILING DATE: 08-NOV-1996

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(2) INFORMATION FOR SEQ ID NO:1:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 20 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

GGA GTG TGG ATT CGC ACT CC   20

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 17 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

GCT CCA AAT TCT TTA TA   17

(2) INFORMATION FOR SEQ ID NO:3:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 20 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

CCT TTA CCC CGT TGC CCG GC   20

(2) INFORMATION FOR SEQ ID NO:4:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 17 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

GCT CCA AAT TCT TTA TA   17

(2) INFORMATION FOR SEQ ID NO:5:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 23 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single

            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

GCC GCG TCG CAG AAG ATC TCA AT   23

(2) INFORMATION FOR SEQ ID NO:6:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 20 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

GGT TCT ATC CTA ACC TTA CC   20

(2) INFORMATION FOR SEQ ID NO:7:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 23 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: DNA

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

GCC TCA TTT TGT GGG TCA CCA TA   23

(2) INFORMATION FOR SEQ ID NO:8:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 21 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: DNA

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

TGG GGG TGG AGC CCT CAG GCT   21

(2) INFORMATION FOR SEQ ID NO:9:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 20 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: DNA

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

CAC AAC ATT CCA CCA AGC TC   20

(2) INFORMATION FOR SEQ ID NO:10:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 18 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: DNA

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

AAA TTC GCA GTC CCC AAC   18

(2) INFORMATION FOR SEQ ID NO:11:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 19 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: single
       (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

GTT TCC CTC TTC TTG CTG T   19

(2) INFORMATION FOR SEQ ID NO:12:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 21 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: single
       (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

TTT TCT TTT GTC TTT GGG TAT   21

(2) INFORMATION FOR SEQ ID NO:13:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 21 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: single
       (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

CCA ACT TAC AAG GCC TTT CTG   21

(2) INFORMATION FOR SEQ ID NO:14:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 23 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: single

       (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

CAT CGT TTC CAT GGC TGC TAG GC   23

(2) INFORMATION FOR SEQ ID NO:15:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 19 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: single
       (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

GTT TCC CTC TTC TTG CTG T   19

(2) INFORMATION FOR SEQ ID NO:16:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 21 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

ATA CCC AAA GAC AAA AGA AAA   21

(2) INFORMATION FOR SEQ ID NO:17:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 550 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 1..549

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

```
TCT TCC AAT TTG TCC TGG TTA TCG CTG GAT GTG TCT GCG GCG TTT TAT    48
Ser Ser Asn Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr
 1               5                  10                  15

CAT ATT CCT CTT CAT CCT GCT GCT ATG CCT CAT CTT CTT ATT GGT TCT    96
His Ile Pro Leu His Pro Ala Ala Met Pro His Leu Leu Ile Gly Ser
            20                  25                  30

TCT GGA TTA TCA AGG TAT GTT GCC CGT TTG TCC TCT AAT TCC AGG ATC   144
Ser Gly Leu Ser Arg Tyr Val Ala Arg Leu Ser Ser Asn Ser Arg Ile

        35                  40                  45

AAC AAC AAC ATG CAA AAC CTG CAC GAC TCC TGC TCA AGG CAA CTC TAC   192
Asn Asn Asn Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln Leu Tyr
    50                  55                  60

GTT TCC CTC ATG TTG CTG TAC AAA ACC TAC GGA GAG AAA TTG CAC CTG   240
Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Glu Lys Leu His Leu
65                  70                  75                  80

TAT TCC CAT CCC ATC GTC CTG GGC TTT CGC AAA ATA CCT ATG GGA GTG   288
Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met Gly Val
                85                  90                  95

GGC CTC AGT CCG TTT CTC TTG GCT CAG TTT ACT AGT GCC ATT TGT TCA   336
Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Cys Ser
```

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```
GTG GTT CGT AGG GCT TTC CCC CAC TGT TTG GCT TTC AGC TAT ATG GAT        384
Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr Met Asp
        115                 120                 125

GAT GTG GTA TTG GGG GCC AAG TCT GTA CAG CAT CGT GAG GCC CTT TAT        432
Asp Val Val Leu Gly Ala Lys Ser Val Gln His Arg Glu Ala Leu Tyr
    130                 135                 140

ACC GCT GTT ACC AAT TTT CTT TTG TCT CTG GGT ATA CAT TTA AAC CCT        480
Thr Ala Val Thr Asn Phe Leu Leu Ser Leu Gly Ile His Leu Asn Pro
145                 150                 155                 160

AAC AAA ACA AAA AGA TGG GGT TAT TCC CTA AAC TTC ATG GGT TAC ATA        528
Asn Lys Thr Lys Arg Trp Gly Tyr Ser Leu Asn Phe Met Gly Tyr Ile
                165                 170                 175

ATT GGA AGT TGG GGA ACA TTG C                                          550
Ile Gly Ser Trp Gly Thr Leu
                180
```

(2) INFORMATION FOR SEQ ID NO:18:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 183 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

```
Ser Ser Asn Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr
 1               5                  10                  15

His Ile Pro Leu His Pro Ala Ala Met Pro His Leu Leu Ile Gly Ser
            20                  25                  30

Ser Gly Leu Ser Arg Tyr Val Ala Arg Leu Ser Ser Asn Ser Arg Ile
        35                  40                  45

Asn Asn Asn Met Gln Asn Leu His Asp Ser Cys Ser Arg Gln Leu Tyr
    50                  55                  60

Val Ser Leu Met Leu Leu Tyr Lys Thr Tyr Gly Glu Lys Leu His Leu
65                  70                  75                  80

Tyr Ser His Pro Ile Val Leu Gly Phe Arg Lys Ile Pro Met Gly Val
            85                  90                  95

Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Cys Ser
        100                 105                 110

Val Val Arg Arg Ala Phe Pro His Cys Leu Ala Phe Ser Tyr Met Asp
        115                 120                 125

Asp Val Val Leu Gly Ala Lys Ser Val Gln His Arg Glu Ala Leu Tyr
    130                 135                 140

Thr Ala Val Thr Asn Phe Leu Leu Ser Leu Gly Ile His Leu Asn Pro
145                 150                 155                 160

Asn Lys Thr Lys Arg Trp Gly Tyr Ser Leu Asn Phe Met Gly Tyr Ile
                165                 170                 175
```

Ile Gly Ser Trp Gly Thr Leu
          180

(2) INFORMATION FOR SEQ ID NO:19:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 550 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 2..550

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

```
T CTT CCA ATT TGT CCT GGT TAT CGC TGG ATG TGT CTG CGG CGT TTT          46
  Leu Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys Leu Arg Arg Phe
  1               5                   10                  15

ATC ATA TTC CTC TTC ATC CTG CTG CTA TGC CTC ATC TTC TTA TTG GTT          94
Ile Ile Phe Leu Phe Ile Leu Leu Leu Cys Leu Ile Phe Leu Leu Val
              20                  25                  30

CTT CTG GAT TAT CAA GGT ATG TTG CCC GTT TGT CCT CTA ATT CCA GGA         142
Leu Leu Asp Tyr Gln Gly Met Leu Pro Val Cys Pro Leu Ile Pro Gly
              35                  40                  45

TCA ACA ACA ACA TGC AAA ACC TGC ACG ACT CCT GCT CAA GGC AAC TCT         190
Ser Thr Thr Thr Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser
          50                  55                  60

ACG TTT CCC TCA TGT TGC TGT ACA AAA CCT ACG GAG AGA AAT TGC ACC         238
Thr Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Glu Arg Asn Cys Thr
      65                  70                  75

TGT ATT CCC ATC CCA TCG TCC TGG GCT TTC GCA AAA TAC CTA TGG GAG         286
Cys Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Lys Tyr Leu Trp Glu
80                  85                  90                  95

TGG GCC TCA GTC CGT TTC TCT TGG CTC AGT TTA CTA GTG CCA TTT GTT         334
Trp Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val
              100                 105                 110

CAG TGG TTC GTA GGG CTT TCC CCC ACT GTT TGG CTT TCA GCT ATA TGG         382
Gln Trp Phe Val Gly Leu Ser Pro Thr Val Trp Leu Ser Ala Ile Trp
          115                 120                 125

ATG ATG TGG TAT TGG GGG CCA AGT CTG TAC AGC ATC GTG AGG CCC TTT         430
Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Ser Ile Val Arg Pro Phe
          130                 135                 140

ATA CCG CTG TTA CCA ATT TTC TTT TGT CTC TGG GTA TAC ATT TAA ACC         478
Ile Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile  *  Thr
      145                 150                 155

CTA ACA AAA CAA AAA GAT GGG GTT ATT CCC TAA ACT TCA TGG GTT ACA         526
Leu Thr Lys Gln Lys Asp Gly Val Ile Pro  *  Thr Ser Trp Val Thr
160                 165                 170                 175

TAA TTG GAA GTT GGG GAA CAT TGC                                         550
 *  Leu Glu Val Gly Glu His Cys
```

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(2) INFORMATION FOR SEQ ID NO:20:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 157 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: protein

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

```
Leu Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys Leu Arg Arg Phe Ile
 1           5               10              15

Ile Phe Leu Phe Ile Leu Leu Leu Cys Leu Ile Phe Leu Leu Val Leu
            20              25              30

Leu Asp Tyr Gln Gly Met Leu Pro Val Cys Pro Leu Ile Pro Gly Ser
        35              40              45

Thr Thr Thr Cys Lys Thr Cys Thr Thr Pro Ala Gln Gly Asn Ser Thr
    50              55              60

Phe Pro Ser Cys Cys Cys Thr Lys Pro Thr Glu Arg Asn Cys Thr Cys
65              70              75              80

Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Lys Tyr Leu Trp Glu Trp
            85              90              95

Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro Phe Val Gln
            100             105             110

Trp Phe Val Gly Leu Ser Pro Thr Val Trp Leu Ser Ala Ile Trp Met
        115             120             125

Met Trp Tyr Trp Gly Pro Ser Leu Tyr Ser Ile Val Arg Pro Phe Ile
    130             135             140

Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile
145             150             155
```

(2) INFORMATION FOR SEQ ID NO:21:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 11 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: protein

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

```
Thr Leu Thr Lys Gln Lys Asp Gly Val Ile Pro
 1           5                   10
```

(2) INFORMATION FOR SEQ ID NO:22:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 5 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Thr Ser Trp Val Thr
1   5

(2) INFORMATION FOR SEQ ID NO:23:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 7 amino acids
            (B) TYPE: amino acid
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: protein

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Leu Glu Val Gly Glu His Cys
1   5

(2) INFORMATION FOR SEQ ID NO:24:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 27 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: peptide

        (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 1
            (D) OTHER INFORMATION: /product= "X = S OR A"

        (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 13
            (D) OTHER INFORMATION: /product= "X = I OR L"

        (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 17
            (D) OTHER INFORMATION: /product= "X = V or G"

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

        Xaa His Pro Thr Leu Ile Val Leu Gly Phe Arg Lys Xaa Pro Met Gly
        1   5   10   15

        Xaa Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe
                    20   25

(2) INFORMATION FOR SEQ ID NO:25:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 47 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: peptide

(ix) FEATURE:
    (A) NAME/KEY: Modified-site
    (B) LOCATION: 1
    (D) OTHER INFORMATION: /product= "X = Q OR K"

(ix) FEATURE:
    (A) NAME/KEY: Modified-site
    (B) LOCATION: 16
    (D) OTHER INFORMATION: /product= "X = S OR A"

(ix) FEATURE:
    (A) NAME/KEY: Modified-site
    (B) LOCATION: 20
    (D) OTHER INFORMATION: /product= "X= I OR V"

(ix) FEATURE:
    (A) NAME/KEY: Modified-site
    (B) LOCATION: 26
    (D) OTHER INFORMATION: /product= "X = I OR L"

(ix) FEATURE:
    (A) NAME/KEY: Modified-site
    (B) LOCATION: 30
    (D) OTHER INFORMATION: /product= "X = V OR G"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Xaa Thr Tyr Ile Phe Gly Arg Ile Trp Lys Leu His Leu Tyr Leu Xaa
1   5   10   15

His Pro Ile Xaa Leu Gly Phe Arg Lys Xaa Pro Met Gly Xaa Gly Leu
            20   25   30

Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Cys Leu Ser
        35   40   45

(2) INFORMATION FOR SEQ ID NO:26:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 11 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 1
        (D) OTHER INFORMATION: /product= "X = A OR V"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 3
        (D) OTHER INFORMATION: /product= "X = S OR A"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 8
        (D) OTHER INFORMATION: /product= "X = V, L OR M"

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

```
Xaa Phe Xaa Tyr Met Asp Asp Xaa Val Leu Gly
1               5               10
```

(2) INFORMATION FOR SEQ ID NO:27:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 44 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 1
        (D) OTHER INFORMATION: /product= "X = S OR A"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 5
        (D) OTHER INFORMATION: /product= "X = I OR V"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 8
        (D) OTHER INFORMATION: /product= "X = F OR L"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 11
        (D) OTHER INFORMATION: /product= "X = I OR L"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 15
        (D) OTHER INFORMATION: /product= "X = L, V OR G"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 19
        (D) OTHER INFORMATION: /product= "X = P OR L"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 22
        (D) OTHER INFORMATION: /product= "X = L OR M"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 29
        (D) OTHER INFORMATION: /product= "X = I OR L"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 30
        (D) OTHER INFORMATION: /product= "X = C OR L"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 31
        (D) OTHER INFORMATION: /product= "X = A OR V"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site

```
            (B) LOCATION: 33
            (D) OTHER INFORMATION: /product= "X = S OR A"

   (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 35
            (D) OTHER INFORMATION: /product= "X = M, I OR V"

   (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 38
            (D) OTHER INFORMATION: /product= "X = V, L OR M"

   (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 43
            (D) OTHER INFORMATION: /product= "X = K OR R"

   (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 44
            (D) OTHER INFORMATION: /product= "X = S OR T"


   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

   Xaa His Pro Ile Xaa Leu Gly Xaa Arg Lys Xaa Pro Met Gly Xaa Gly
   1               5                   10                  15

   Leu Ser Xaa Phe Leu Xaa Ala Gln Phe Thr Ser Ala Xaa Xaa Xaa Phe
               20                  25                  30

   Xaa Tyr Xaa Asp Asp Xaa Val Leu Gly Ala Xaa Xaa
               35                  40

(2) INFORMATION FOR SEQ ID NO:28:

   (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 52 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: peptide


  (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 1
            (D) OTHER INFORMATION: /product= "X = Q OR K"

  (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 3
            (D) OTHER INFORMATION: /product= "X = Y OR F"

  (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 4
            (D) OTHER INFORMATION: /product= "X = G OR E"

  (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 5
            (D) OTHER INFORMATION: /product= "X = R, W OR K"

  (ix) FEATURE:
```

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                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 10
                    (D)  OTHER INFORMATION: /product= "X = Y OR L"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 11
                    (D)  OTHER INFORMATION: /product= "X = S OR A"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 14
                    (D)  OTHER INFORMATION: /product= "X = I OR V"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 17
                    (D)  OTHER INFORMATION: /product= "X = F OR L"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 19
                    (D)  OTHER INFORMATION: /product= "X = I OR L"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 23
                    (D)  OTHER INFORMATION: /product= "X = L, V OR G"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 27
                    (D)  OTHER INFORMATION: /product= "X = P OR L"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 30
                    (D)  OTHER INFORMATION: /product= "X = L OR M"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 37
                    (D)  OTHER INFORMATION: /product= "X = I OR L"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 38
                    (D)  OTHER INFORMATION: /product= "X = C OR L"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 39
                    (D)  OTHER INFORMATION: /product= "X = A OR V"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 41
                    (D)  OTHER INFORMATION: /product= "X = S OR A"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 43
                    (D)  OTHER INFORMATION: /product= "X = M, I OR V"

          (ix)  FEATURE:
                    (A)  NAME/KEY: Modified-site
                    (B)  LOCATION: 46
```

(D) OTHER INFORMATION: /product= "X = V, L OR M"

    (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 51
            (D) OTHER INFORMATION: /product= "X = K OR R"

    (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 52
            (D) OTHER INFORMATION: /product= "X = S OR T"

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

    Xaa Thr Xaa Xaa Xaa Lys Leu His Leu Xaa Xaa His Pro Xaa Leu Gly
    1   5   10   15

    Xaa Lys Xaa Pro Met Gly Xaa Gly Leu Ser Xaa Phe Leu Xaa Ala Gln
                20   25   30

    Phe Thr Ser Ala Xaa Xaa Xaa Phe Xaa Tyr Xaa Asp Asp Xaa Val Leu
                35   40   45

    Gly Ala Xaa Xaa
                50

(2) INFORMATION FOR SEQ ID NO:29:

    (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 179 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 2
            (D) OTHER INFORMATION: /product= "X = N OR D"

    (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 17
            (D) OTHER INFORMATION: /product= "X = I OR P"

    (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 29
            (D) OTHER INFORMATION: /product= " X = I OR V"

    (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 35
            (D) OTHER INFORMATION: /product= " X = S OR D"

    (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 44
            (D) OTHER INFORMATION: /product= " X = T OR N"

    (ix) FEATURE:
            (A) NAME/KEY: Modified-site
            (B) LOCATION: 46
            (D) OTHER INFORMATION: /product= " X = R OR N"

(ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 47
        (D) OTHER INFORMATION: /product= " X = N OR I"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 48
        (D) OTHER INFORMATION: /product= "MORE THAN 3 DIFFERENT AA
POSSIBLE"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 50
        (D) OTHER INFORMATION: /product= " X = N, Y OR H"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 52
        (D) OTHER INFORMATION: /product= " X = Y OR H"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 53
        (D) OTHER INFORMATION: /product= " X = G OR R"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 54
        (D) OTHER INFORMATION: /product= "MORE THAN 3
POSSIBILITIES"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 55
        (D) OTHER INFORMATION: /product= "MORE THAN 3
POSSIBILITIES"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 56
        (D) OTHER INFORMATION: /product= "MORE THAN 3
POSSIBILITIES"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 57
        (D) OTHER INFORMATION: /product= " X = D OR N"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 60
        (D) OTHER INFORMATION: /product= " X = D OR N"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 61
        (D) OTHER INFORMATION: /product= " X = S OR Y"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 65
        (D) OTHER INFORMATION: /product= " X = N OR Q"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site

```
          (B)  LOCATION: 84
          (D)  OTHER INFORMATION: /product= " X = Y OR L"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 85
          (D)  OTHER INFORMATION: /product= " X = S OR A"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 88
          (D)  OTHER INFORMATION: /product= " X = I OR V"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 94
          (D)  OTHER INFORMATION: /product= " X = I OR L"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 98
          (D)  OTHER INFORMATION: /product= " X = V OR G"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 113
          (D)  OTHER INFORMATION: /product= " X = C OR L"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 114
          (D)  OTHER INFORMATION: /product= " X = A OR S"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 115
          (D)  OTHER INFORMATION: /product= " X = V OR M"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 116
          (D)  OTHER INFORMATION: /product= "X =V OR T"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 117
          (D)  OTHER INFORMATION: /product= "X =R OR C"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 121
          (D)  OTHER INFORMATION: /product= "X =F OR P"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 124
          (D)  OTHER INFORMATION: /product= "X =L OR V"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 125
          (D)  OTHER INFORMATION: /product= "X =A OR V"

(ix)  FEATURE:
          (A)  NAME/KEY: Modified-site
          (B)  LOCATION: 127
          (D)  OTHER INFORMATION: /product= "X =S OR A"
```

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 132
      (D) OTHER INFORMATION: /product= "X =V, L OR M"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 137
      (D) OTHER INFORMATION: /product= "X =K OR R"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 138
      (D) OTHER INFORMATION: /product= "X =S OR T"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 139
      (D) OTHER INFORMATION: /product= "X =V OR G"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 140
      (D) OTHER INFORMATION: /product= "X =Q OR E"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 142
      (D) OTHER INFORMATION: /product= "X =L, S OR R"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 144
      (D) OTHER INFORMATION: /product= "X =S OR F"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 146
      (D) OTHER INFORMATION: /product= "X =F OR Y"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 147
      (D) OTHER INFORMATION: /product= "X =T OR A"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 148
      (D) OTHER INFORMATION: /product= "X =A OR S"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 149
      (D) OTHER INFORMATION: /product= "X =V OR I"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 150
      (D) OTHER INFORMATION: /product= "X =T OR C"

(ix) FEATURE:
      (A) NAME/KEY: Modified-site
      (B) LOCATION: 151
      (D) OTHER INFORMATION: /product= "X =N OR S"

(ix) FEATURE:

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(A) NAME/KEY: Modified-site
                    (B) LOCATION: 152
                    (D) OTHER INFORMATION: /product= "X =F OR V"

          (ix) FEATURE:
                    (A) NAME/KEY: Modified-site
                    (B) LOCATION: 155
                    (D) OTHER INFORMATION: /product= "X =S OR D"

          (ix) FEATURE:
                    (A) NAME/KEY: Modified-site
                    (B) LOCATION: 156
                    (D) OTHER INFORMATION: /product= "X =L OR V"

          (ix) FEATURE:
                    (A) NAME/KEY: Modified-site
                    (B) LOCATION: 163
                    (D) OTHER INFORMATION: /product= "X =N OR Q"

          (ix) FEATURE:
                    (A) NAME/KEY: Modified-site
                    (B) LOCATION: 178
                    (D) OTHER INFORMATION: /product= "X =V OR I"

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

          Ser Xaa Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr His
          1   5   10   15

          Xaa Pro Leu His Pro Ala Ala Met Pro His Leu Leu Xaa Gly Ser Ser
                      20   25   30

          Gly Leu Xaa Arg Tyr Val Ala Arg Leu Ser Ser Xaa Ser Xaa Xaa Xaa
                  35   40   45

          Asn Xaa Gln Xaa Xaa Xaa Xaa Xaa Xaa Leu His Xaa Xaa Cys Ser Arg
              50   55   60

          Xaa Leu Tyr Val Ser Leu Xaa Leu Leu Tyr Xaa Thr Xaa Gly Xaa Lys
          65   70   75   80

          Leu His Leu Xaa Xaa His Pro Xaa Leu Gly Phe Arg Lys Xaa Pro Met
                          85   90   95

          Gly Xaa Gly Leu Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile
                      100   105   110

          Xaa Xaa Xaa Xaa Xaa Arg Ala Phe Xaa His Cys Xaa Xaa Phe Xaa Tyr
                  115   120   125

          Met Asp Asp Xaa Val Leu Gly Ala Xaa Xaa Xaa Xaa His Xaa Glu Xaa
              130   135   140

          Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Leu Xaa Xaa Gly Ile His Leu
          145   150   155   160

          Asn Pro Xaa Lys Thr Lys Arg Trp Gly Tyr Ser Leu Asn Phe Met Gly
                      165   170   175

          Tyr Xaa Gly

(2) INFORMATION FOR SEQ ID NO:30:

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 4 amino acids

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```
          (B) TYPE: amino acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide



    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

    Tyr Met Asp Asp
    1

(2) INFORMATION FOR SEQ ID NO:31:

    (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 71 amino acids
          (B) TYPE: amino acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide



    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

    Ser Asp Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr Ile
    1               5               10              15

    His Ile Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile
                  20              25              30

    Ile Leu Gly Phe Arg Lys Ile Pro Met Gly Val Gly Leu Ser Pro Phe
              35              40              45

    Leu Ile Leu Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr
              50              55              60

    Met Asp Asp Val Val Leu Gly
    65                  70

(2) INFORMATION FOR SEQ ID NO:32:

    (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 69 amino acids
          (B) TYPE: amino acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide



    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

    Ser Asp Leu Ser Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr His
    1               5               10              15

    Gln Thr Phe Gly Arg Lys Ile Leu His Leu Tyr Ser His Pro Ile Ile
              20              25              30

    Leu Gly Phe Arg Lys Ile Pro Met Gly Leu Gly Leu Ser Leu Phe Leu
              35              40              45

    Met Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr Met Asp
              50              55              60
```

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```
Asp Val Val Leu Gly
65
```

(2) INFORMATION FOR SEQ ID NO:33:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 68 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

```
Thr Asp Leu Gln Trp Leu Ser Leu Asp Val Ser Ala Ala Phe Tyr His
1               5                   10                  15

Lys Thr Tyr Gly Arg Lys Leu His Leu Leu Ala His Pro Phe Ile Met
            20                  25                  30

Gly Phe Arg Lys Leu Phe Met Gly Val Gly Leu Ser Pro Phe Leu Leu
            35                  40                  45

Ala Gln Phe Thr Ser Ala Leu Ala Ser Val Phe Ala Tyr Met Asp Asp
    50                  55                  60

Leu Val Leu Gly
65
```

(2) INFORMATION FOR SEQ ID NO:34:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 54 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

```
Lys Lys Lys Ser Val Thr Val Leu Asp Val Gly Asp Ala Tyr Phe Ser
1               5                   10                  15

Arg Tyr Gln Tyr Asn Val Leu Pro Gln Gly Trp Lys Gly Ser Pro Ala
            20                  25                  30

Ile Phe Gln Ser Ser His Thr Lys Ile Leu Glu Ile Tyr Gln Tyr Met
            35                  40                  45

Asp Asp Leu Tyr Val Gly
    50
```

(2) INFORMATION FOR SEQ ID NO:35:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 33 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Thr Thr Ile Gly Arg Glu Met Leu Leu Ala Thr Arg Glu Tyr Val His
1   5   10   15

Ala Arg Trp Ala Ala Phe Glu Gln Leu Leu Ala Asp Phe Pro Glu Ala
            20   25   30

Ala

(2) INFORMATION FOR SEQ ID NO:36:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 52 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile Ile Leu
1   5   10   15

Gly Phe Arg Lys Ile Pro Met Gly Leu Gly Leu Ser Leu Phe Leu Met
            20   25   30

Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr Met Asp Asp
            35   40   45

Val Val Leu Gly
        50

(2) INFORMATION FOR SEQ ID NO:37:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 52 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile Ile Leu
1   5   10   15

Gly Phe Arg Lys Ile Pro Met Gly Val Gly Leu Ser Pro Phe Leu Met
            20   25   30

Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr Met Asp Asp
            35   40   45

Val Val Leu Gly
        50

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(2) INFORMATION FOR SEQ ID NO:38:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 52 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 46
        (D) OTHER INFORMATION: /product= "X = V or I"

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

```
Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile Ile Leu
1               5                   10                  15

Gly Leu Arg Lys Ile Pro Met Gly Val Gly Leu Ser Pro Phe Leu Met
            20                  25                  30

Ala Gln Phe Thr Ser Ala Ile Cys Ser Ala Phe Ser Tyr Xaa Asp Asp
        35                  40                  45

Val Val Leu Gly
        50
```

(2) INFORMATION FOR SEQ ID NO:39:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 52 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

```
Gln Thr Phe Gly Arg Lys Leu His Leu Tyr Ser His Pro Ile Val Leu
1               5                   10                  15

Gly Phe Arg Lys Ile Pro Met Gly Val Gly Leu Ser Pro Phe Leu Leu
            20                  25                  30

Ala Gln Phe Thr Ser Ala Leu Cys Ser Ala Phe Ser Tyr Met Asp Asp
        35                  40                  45

Val Val Leu Gly
        50
```

(2) INFORMATION FOR SEQ ID NO:40:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 14 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Ala Phe Ser Tyr Met Asp Asp Val Val Leu Gly Ala Lys Thr
1   5   10

(2) INFORMATION FOR SEQ ID NO:41:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 54 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION:1
        (D) OTHER INFORMATION: /product= " X = S OR A"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 4
        (D) OTHER INFORMATION: /product= " X = I OR V"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 10
        (D) OTHER INFORMATION: /product= " X = I OR L"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 14
        (D) OTHER INFORMATION: /product= " X = V OR G"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 29
        (D) OTHER INFORMATION: /product= " X = C OR L"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 30
        (D) OTHER INFORMATION: /product= " X = A OR S"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 31
        (D) OTHER INFORMATION: /product= " X = V OR M"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 32
        (D) OTHER INFORMATION: /product= "X =V OR T"

    (ix) FEATURE:
        (A) NAME/KEY: Modified-site
        (B) LOCATION: 33
        (D) OTHER INFORMATION: /product= "X =R OR C"

    (ix) FEATURE:

```
            (A)  NAME/KEY: Modified-site
            (B)  LOCATION: 37
            (D)  OTHER INFORMATION: /product= "X =F OR P"

      (ix) FEATURE:
            (A)  NAME/KEY: Modified-site
            (B)  LOCATION: 40
            (D)  OTHER INFORMATION: /product= "X =L OR V"

      (ix) FEATURE:
            (A)  NAME/KEY: Modified-site
            (B)  LOCATION: 41
            (D)  OTHER INFORMATION: /product= "X =A OR V"

      (ix) FEATURE:
            (A)  NAME/KEY: Modified-site
            (B)  LOCATION: 43
            (D)  OTHER INFORMATION: /product= "X =S OR A"

      (ix) FEATURE:
            (A)  NAME/KEY: Modified-site
            (B)  LOCATION: 48
            (D)  OTHER INFORMATION: /product= "X =V, L OR M"

      (ix) FEATURE:
            (A)  NAME/KEY: Modified-site
            (B)  LOCATION: 53
            (D)  OTHER INFORMATION: /product= "X =K OR R"

      (ix) FEATURE:
            (A)  NAME/KEY: Modified-site
            (B)  LOCATION: 54
            (D)  OTHER INFORMATION: /product= "X =S OR T"



      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Xaa His Pro Xaa Leu Gly Phe Arg Lys Xaa Pro Met Gly Xaa Gly Leu
1               5                   10                  15
Ser Pro Phe Leu Leu Ala Gln Phe Thr Ser Ala Ile Xaa Xaa Xaa Xaa
            20                  25                  30
Xaa Arg Ala Phe Xaa His Cys Xaa Xaa Phe Xaa Tyr Met Asp Asp Xaa
        35                  40                  45
Val Leu Gly Ala Xaa Xaa
        50
```